CLAIMS

What is claimed is:

1. A thermal management system comprising:

a fuel stabilization system;

a first liquid-to-liquid heat exchanger system in fluid fuel communication with said fuel stabilization system, said first liquid-to-liquid heat exchanger operable at a first maximum temperature; and

a second liquid-to-liquid heat exchanger system in fluid fuel communication with said first liquid-to-liquid heat exchanger, said second liquid-to-liquid heat exchanger operable at a second maximum temperature, said second maximum temperature greater than said first maximum temperature.

2. The thermal management system as recited in claim 1, wherein said fuel stabilization system comprises a deoxygenation system.

3. The thermal management system as recited in claim 1, further comprising a fuel pump in fluid fuel communication with said first liquid-to-liquid heat exchanger and said second liquid-to-liquid heat exchanger, said fuel pump between said first and said second liquid-to-liquid heat exchangers.

4. The thermal management system as recited in claim 1, wherein said first liquid-to-liquid heat exchanger and said second liquid-to-liquid heat exchanger are fuel-to-oil heat exchangers.

5. The thermal management system as recited in claim 1, wherein said second liquid-to-liquid heat exchanger utilizes an ester-based oil.

6. The thermal management system as recited in claim 5, wherein said ester-based oil operates above 325 degrees Fahrenheit.

7. The thermal management system as recited in claim 1, wherein said first maximum temperature does not exceed approximately 325 degrees Fahrenheit.

8. The thermal management system as recited in claim 1, wherein said first liquid-to-liquid heat exchanger is in fluid communication with a fan gear oil system of a fan geared gas turbine engine.

9. The thermal management system as recited in claim 1, wherein said second liquid-to-liquid heat exchanger is in fluid communication with a gas turbine engine oil system.

10. The thermal management system as recited in claim 9, wherein said second liquid-to-liquid heat exchanger utilizes an oil which operates in excess of approximately 325 degrees Fahrenheit.

11. A method of thermal management for a gas turbine engine comprising the steps of:

(1) deoxygenating a fuel to provide a deoxygenated fuel;

(2) communicating the fuel through a first liquid-to-liquid heat exchanger system operable at a first maximum temperature;

(3) communicating the deoxygenated fuel through a second liquid-to-liquid heat exchanger system operable at a second maximum temperature, said second maximum temperature greater than said first maximum temperature.

12. A method as recited in claim 11, wherein said step (2) further comprises the step of:

communicating the deoxygenated fuel and an oil through the first liquid-to-liquid heat exchanger, the oil effective above approximately 325 degrees Fahrenheit.

13. A method as recited in claim 11, wherein said step (2) further comprises the step of:

communicating the deoxygenated fuel and an oil through the first liquid-to-liquid heat exchanger and preventing the oil from exceeding approximately 325 degrees Fahrenheit.

14. A method as recited in claim 13, further comprises the step of:

communicating the oil through an oil loop in communication with a subsystem which can not exceed approximately 325 degrees Fahrenheit.

15. A method as recited in claim 11, wherein said step (3) further comprises the step of:

communicating the deoxygenated fuel and an oil through the second liquid-to-liquid heat exchanger, the oil effective above approximately 325 degrees Fahrenheit.

16. A method as recited in claim 11, wherein said step (3) further comprises the step of:

communicating the deoxygenated fuel and an oil through the second liquid-to-liquid heat exchanger and permitting the deoxygenated fuel to exceed 325 degrees Fahrenheit.

17. A method as recited in claim 11, wherein said step (1) occurs prior to said step (2).

18. A method as recited in claim 11, further comprises the step of:

communicating the deoxygenated fuel through a fuel pump after said step (2).

19. A method as recited in claim 11, further comprises the step of:

communicating the deoxygenated fuel from the first liquid-to-liquid heat exchanger to the second liquid-to-liquid heat exchanger.